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SIX NEW SPECIES OF INDO-PACIFIC TEREBRIDAE (GASTROPODA)

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While doing research for a forthcoming book, we have come across a number of undescribed

terebrid species, some in museums, others from private collectors. Some other species were

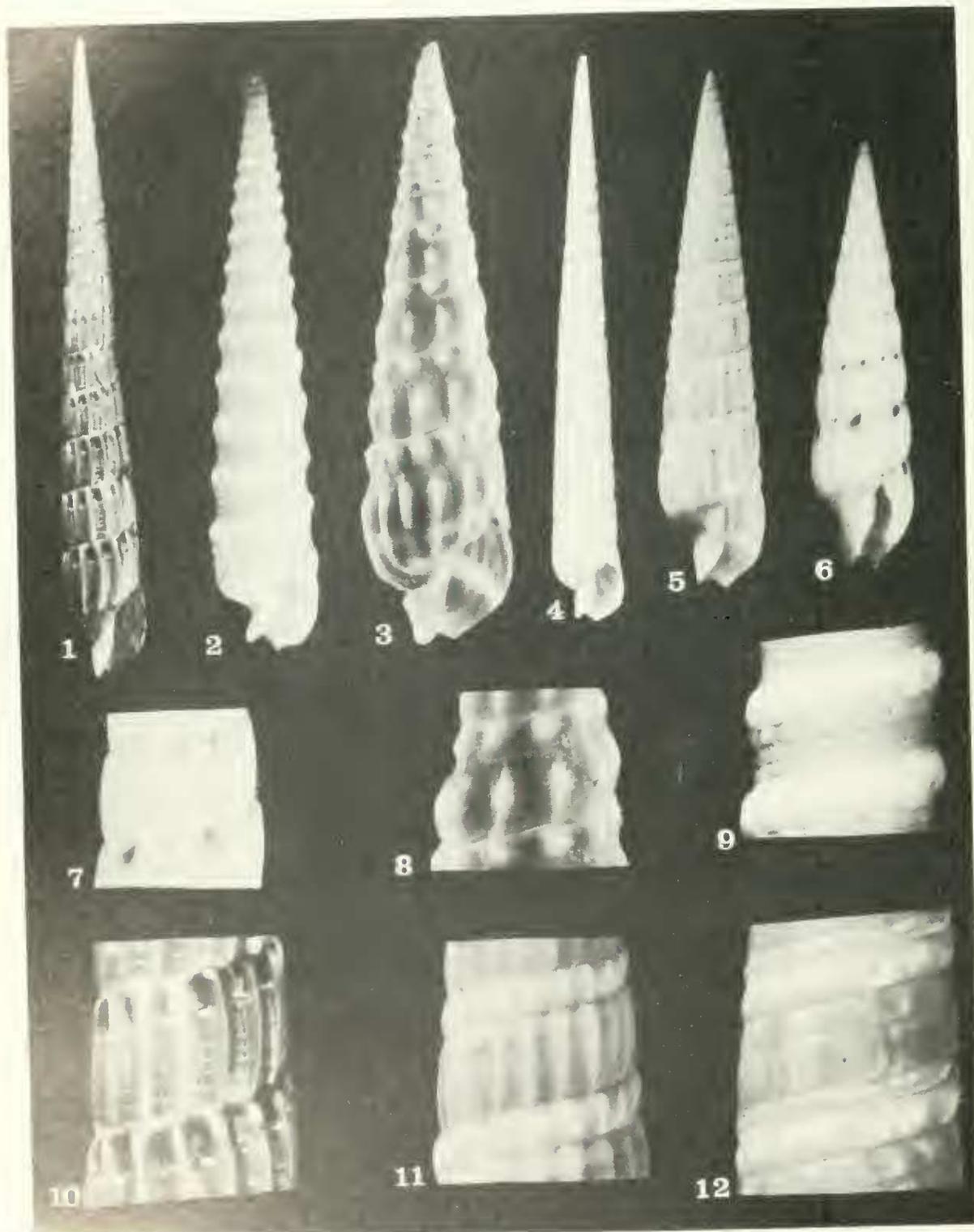


FIGURE 10. 1 & 10: *Terebra mactanensis* Bratcher & Cernohorsky, new species. Holotype, LACM no. 1968, 54.4 mm. 2 & 9: *Terebra caddeyi* Bratcher & Cernohorsky, new species. Holotype, LACM no. 1969, 26.1 mm. 3 & 8: *Duplicaria mozambiquensis* Bratcher & Cernohorsky, new species. Holotype NM no. H7843, 22.3 mm. 4 & 12: *Terebra caddeyi* Bratcher & Cernohorsky, new species. Holotype LACM no. 1967, 52.7 mm. 5 & 11: *Duplicaria baileyi* Bratcher & Cernohorsky, new species. Holotype LACM no. 1968, 17.9 mm. 6 & 7: *Terebra burchi* Bratcher & Cernohorsky, new species. Holotype MNHN, 17.9 mm.

represented only by a single specimen, and we will wait for more material before describing them. Six are being described here.

***Terebra burchi* new species**

(Figs. 6, 7)

Diagnosis: A pure-white shell with small brown dots scattered at random just below the suture and with a broadband of yellowish brown on the base of the body whorl.

Description: Shell about 18 mm in length, with 12 whorls of teleoconch; color pure-white with small yellowish brown dots scattered at random immediately anterior to the suture and with the same color on the base of the body whorl; outline of whorls convex; protoconch with 1½ whorls remaining (paratype with intact protoconch of 3½ amber conical whorls); sculpture of slightly arcuate axial ribs from suture to suture, 13 on penultimate whorl; ribs well-developed, quite sharp, and narrower than interspaces; interspaces with 5 evenly-spaced grooves, the posterior being deep; interstitial grooves not crossing ribs; no subsutural band; body whorl with ribs fading at periphery; 8 grooves anterior to periphery, 6 posterior; aperture quadrate, with basal plication; columella recurved.

Dimensions: Holotype 17.9 × 4.3 mm. Paratypes from 18.8 × 4.3 to 22.4 × 5.4 mm.

Type locality: Northern Mozambique Channel (12 45'S; 45 18'E), at 15 - 20 m, Benthedi Expedition sta. 32.

Type Material: Holotype MNHN Paris. Paratypes LACM no. 1971 (1); MNHN (2); Bratcher coll. (2); Cernohorsky coll. (2); Tursch coll. (2).

Distribution: From Mozambique and Papua New Guinea; 2 to 20 m. Also Philippines.

Discussion: There are several other Indo-Pacific terebrids with dark areas anterior to the periphery of the body whorl and scattered spots below the suture. None of them has a pure-white background. *Terebra amoena* Deshayes, 1859, *T. conspersa* Hinds, 1844, and *T. pertusa* (Born, 1778), all have larger shells with beige to tan backgrounds and have obvious subsutural bands.

This species is named in honor of a late friend and colleague, R. D. Burch.

***Terebra caddeyi* new species**

(Figs. 4, 12)

Diagnosis: A long, slender, flat-sided terebrid shell, shiny tan, and with 3 or 4 spiral grooves per whorl.

Description: Shell long, slender, with 25 whorls; color shiny tan; outline of whorls straight; protoconch missing; 3 spiral bands, each defined by a spiral groove, occur anterior to suture; posterior band narrow, without nodes; center band of obsolete nodes; anterior band flatter and scarcely noded; no axial sculpture except axial striae; body whorl with deep groove posterior to periphery, followed by 3 weak grooves; aperture small, quadrate; columella curved, with moderately heavy parietal callus; siphonal notch broad.

Dimensions: Holotype 52.7 × 6.9 mm. Paratypes from 44.4 × 5.4 to 53.4 × 6.6 mm.

Type Locality: Korere Village, Rabaul, Papua, New Guinea, 3 m. in depth, on volcanic sand.

Type Material: Holotype LACM no. 1967. Paratypes Bratcher coll. (1); Caddey coll. (2).

Distribution: Known only from type locality.

Discussion: *Terebra lima* Deshayes, 1857, also has a flat-sided shell, but it lacks the sheen of this species and has almost cancellate sculpture with spiral cords and axial sculpture forming small nodes at intersections. *T. jenningsi* Burch, 1965, has a concave outline, a cord at the periphery of the body whorl, and more spiral grooves. It also lacks sheen. This species is named for P. T. Caddey, who collected the type lot.

***Terebra mactanensis* new species**

(Figs. 1, 10)

Diagnosis: A long, extremely slender terebrid shell with dark spots between axial ribs anterior to the suture.

Description: Shell extremely slender, long; color, shiny brown with black spots between axial ribs anterior to suture and a row of small white dots at periphery of body whorl; outline of whorls convex; protoconch of 3 white, conical whorls; sculpture of axial ribs from suture to suture, narrower than interspaces; ribs on body whorl terminating at periphery in a white spot; aperture elongate; columella recurved, white; siphonal fasciole extremely heavy, long.

Dimensions: Holotype 54.4 × 7.2 mm. Paratypes from 47.8 × 6.1 to 62.1 × 8.1 mm.

Type Locality: Punta Egano, Mactan Island, Cebu, Philippine Islands at 200 m.

Type Material: Holotype LACM no. 1968. Paratypes Bratcher collection. (1); Marrow collection. (1).

Distribution: This species is known only from the type locality.

Discussion: One of the paratypes is light orange-brown with dark brown spots between the ribs anterior to the suture. The other is white with a few brown areas anterior to the suture and with extremely faint brown spots at the periphery of the body whorl. All have similar sculpture. There is no Indo-Pacific terebrid species with which *T. mactanensis* could be confused. The white paratype might be compared with *T. fortunae* Deshayes, 1857, which has an inflated shell with longer whorls, has more spiral sculpture; and has no brown ornamentation. The type lot was collected by Max Marrow.

Terebra marrowae new species

(Figs. 2, 9)

Diagnosis: A cream-colored terebrid shell with a few small orange-brown dots and with an exceptionally large, blackish mamillate protoconch.

Description: Shell medium-sized for the genus; color, cream with a few small scattered orange brown dots, protoconch and first whorls of teleoconch brown; outline of whorls concave in early whorls, flat in later ones, with convex subsutural band; protoconch of 1½ broad, mamillate blackish brown whorls; subsutural band of large pearl-like nodes, occasionally spotted between by orange-brown; suture shallow; subsutural groove deep, narrow; subsutural band followed by a narrow, almost smooth, inconspicuous band, becoming slightly nodulous on last 2 whorls; remainder of whorl finely cancellate with 2 spiral cords per whorl, forming shallow pits between intersections; body whorl with finely cancellate sculpture ending posterior to periphery, spiral cords only continuing to spiral fasciole; aperture short, quadrate; columella recurved.

Dimensions: Holotype 26.1 × 5 mm. Paratypes from 21.4 × 4.8 to 32.1 (Apex missing) to 6.4 mm.

Type Locality: Cleaverville, N.W. Australia; intertidal.

Type Material: Holotype LACM no. 1969. Paratypes Bratcher coll. (1); Caddey coll. (2); Cernohorsky coll. (1); Cooper coll. (2).

Distribution: Northwest Australia, intertidal.

Discussion: The most outstanding feature of this species is the extremely large blackish brown or purplish brown mamillate protoconch, with a lighter brown or purplish area extending through two to four whorls of the teleoconch, becoming progressively lighter. The sculpture of some of the paratypes is finer than that of the holotype, with smaller nodes on the subsutural band. The color varies from white to yellowish white with a white subsutural band. All specimens except one have a few tiny scattered brown dots, and that one was collected dead. Two of the paratypes have brownish pin-point dots at the periphery of the body whorl.

There are several other Indo-Pacific terebrid species with cancellate sculpture, all of which are easily separable from *Terebra marrowae*. *T. swobodai* Bratcher, 1981, is more slender, has convex whorls and very heavy, rough sculpture with small nodes forming where axial and spiral cords cross. *T. elliscrossi* Bratcher, 1979, and *T. amanda* Hinds, 1844, both have slender, non-mamillate protoconchs of more than 1½ whorls. Although *T. fenestrata* Hinds, 1844, has a mamillate protoconch, it is about ⅓ as large as that of *T. marrowae*, and the sculpture of the teleoconch is extremely coarse and heavy. This species is named in honor of Lorna Marrow, who collected the holotype.

Duplicaria baileyi new species

(Pl. 5, 11)

- 1965 *Duplicaria australis* (E. A. Smith), J. Cate & R. D. Burch, *Veliger* 6(3):145; 1967 Cernohorsky, *Mar. Shells Pacific* 1:208, pl. 52, fig. 392. [non *Terebra australis* E. A. Smith, 1873].
 1966 *Duplicaria* (*Duplicaria*) sp. Cernohorsky & Jennings, *Veliger* 9(1):58, pl. 6, fig. 44.
 1978 *Terebra australis* (E. A. Smith), Hinton, *Guide Australian Shells*, pl. 59, fig. 6. [non *Terebra australis* E. A. Smith, 1873].

Diagnosis: A beige *Duplicaria* shell with a few yellowish brown splotches scattered irregularly and with brown anterior to the periphery of the body whorl.

Description: Shell medium sized, with 13 whorls of teleoconch; color, beige with a few reddish brown splotches and dots scattered at random, and with the same color anterior to the periphery of the body whorl; outline of whorls slightly convex; protoconch of 4½ pink, translucent, conical whorls; axially ribbed subsutural band defined by shallow groove, with deeper punctations between ribs; remainder of whorl with straight axial ribs contiguous with ribs on band; interspaces about equal to ribs, smooth; body whorl with ribs ending at periphery; periphery marked with light band between rib endings and light-brown area; aperture elongate; columella recurved; siphonal fasciole striate, with moderate keel.

Dimensions: Holotype 24.9 × 5.3 mm. Paratypes 21.5 × 4.5 to 40.0 × 7.9 mm.

Type Locality: Guadalcanal, Solomon Islands 9 25'S; 159 56'E; in sand at 20 m.

Type Material: Holotype LACM no. 1970. Paratypes ANSP no. 352482 (1); AM no. 132464 (1); CAS no. 60674 (1); MCZ no. 290426 (1); MORG no. 21.275; NM no. H-766 (1); USNM no. 782262 (1); Bratcher coll. (2); Cernohorsky coll. (2); Morrow coll. (2).

Distribution: Mozambique to the Philippines and the Solomon Islands; from intertidal to 100 m.

Discussion: The number of axial ribs varies from 20 to 29 on the penultimate whorl, and the basic color varies slightly from cream to beige. The brown splotches may vary in number and size, but they are always inconspicuous. *Duplicaria teramachii* Burch, 1965, is somewhat similar in color pattern although it has a broad band of reddish brown instead of the occasional interrupted blotches. It also has a narrower apical angle, flatter subsutural band, and shorter whorls. This species is named in honor of Brian Bailey who collected the holotype.

***Duplicaria mozambiquensis* new species**

(Figs. 3, 8)

360 *Terebra gracilis* Reeve, *Conch. Icon.* 12, pl. 24, fig. 131

[non Lea 1833; non Gray, 1834] Hab.: Africa; holotype BM(NH). 1874.10.29.2; 22.0 mm.

Diagnosis: A *Duplicaria* with extremely inflated early whorls, a punctate subsutural groove, and a narrow, noded subsutural band.

Description: Shell color light-brown with ivory ribs, nodes, and narrow peripheral stripe on body whorl; outline of whorls convex; protoconch mamillate with 1½ brown, moderately inflated embryonic whorls; sculpture of early whorls of teleoconch consisting of a narrow subsutural band with wide-spaced round nodes (8 or 9), and below each node an arcuate rib almost noded in center, giving an angulate outline to the early whorls; a punctate subsutural groove developing after the 3rd whorl of teleoconch; ribs on remainder of whorl remaining wide-spaced, sharp, and arcuate, but losing the angulate form on later whorls (12 on penultimate whorl); nodes on subsutural band angulate on later whorls; body whorl with sharp ribs continuing below periphery to keel of siphonal fasciole; aperture elongate; columella almost straight.

Dimensions: Holotype 22.3 × 5.6 mm. Paratypes from 17.0 × 4.4 to 33.0 × 6.8 mm.

Type Locality: Mozambique, trawled off Chinde Island.

Type Material: Holotype Natal Museum no. H7843/T2541. Paratypes in BM(NH) 198021; Natal Museum nos. J2973/T2542 (1), 566/T2543 (1), B2137/T2544 (1), H765/T2545 (2); Bratcher coll. (1).

Distribution: From Durban, South Africa, to Mozambique.

Discussion: Four of the paratypes are the same color as the holotype; one is peach color; and two are ivory. Some individuals have small, inconspicuous nodes at the posterior end of the axial ribs. Some have more numerous, less widely spaced ribs.

Duplicaria spectabilis (Hinds, 1844) has similar sculpture, but it has a distinctive color pattern of rich brown and cream stripes, and a protoconch of 2½ whorls. *Duplicaria evoluta* Deshayes 1859, has a broad subsutural space but no groove. It has axial ribs on the subsutural band instead of round nodes, and the early

whorls are quite flat in outline. This is the same species as *Terebra gracilis* Reeve, 1844, a name which was preoccupied.

Abbreviations have been used for a number of institutional collections cited in this paper. They are:

- AM—Australian Museum
 ANSP—Academy of Natural Science of Philadelphia.
 CAS—California Academy of Sciences.
 LACM—Los Angeles County Museum of Natural History.
 MCZ—Museum of Comparative Zoology, Harvard University.
 MNHN—Muséum National d'Histoire Naturelle, Paris.
 MORG—Museu Oceanográfico de Rio Grande, Brazil.
 NM—Natal Museum, South Africa.

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THE FRESHWATER MUSSELS (NAIADS) OF BIG INDIAN CREEK, A SMALL SOUTHERN INDIANA TRIBUTARY OF THE OHIO RIVER (BIVALVIA: UNIONIDAE)

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ABSTRACT

A 1979-81 survey of Big Indian Creek in southern Indiana produced a total of 16 species of freshwater mussels (Naiads). In addition to these unionid species, the exotic clam Corbicula fluminea was also found to be present throughout the stream. The faunal make-up proved to be typically Ohioan in nature. The most common species were Lampsilis r. luteola, Lampsilis ventricosa and Amblema p. plicata. Lampsilis fasciola, Leptodea fragilis and Toxolasma parvus were each represented by a single specimen.

In their *Review of the Mollusca of Indiana*, Goodrich and Alexander Schalie (1944) brought

together, in a condensed form, all the early work done on the freshwater mussels in Indiana